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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,621	03/29/2004	Chien-Hsueh Shih	67,200-1168	2719

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TUNG & ASSOCIATES
Suite 120
838 W. Long Lake Road
Bloomfield Hills, MI 48302

EXAMINER

WONG, EDNA

ART UNIT PAPER NUMBER

1753

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/811,621

Applicant(s)

SHIH ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☐ Claim(s) _____ is/are rejected.
7) ☒ Claim(s) 1-20 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

This is in response to the Amendment dated September 25, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

Specification

The disclosure has been objected to because of minor informalities.

The objection of the disclosure has been withdrawn in view of Applicants' amendment.

Claim Objections

Claims **3, 8, 11, 15 and 18** have been objected to because of minor informalities.

The objection of claims 3, 8, 11, 15 and 18 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims **7-8 and 19** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 7-8 and 19 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 102

Bath

I. Claims 1 and 2 have been rejected under 35 U.S.C. 102(a) as being anticipated by **Miura et al.** (US Patent Application Publication No. 2003/0155247 A1).

The rejection of claims 1 and 2 under 35 U.S.C. 102(a) as being anticipated by Miura et al. is as applied in the Office Action dated January 23, 2006 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that Miura et al. teach that oxycarboxylic and organic phosphonic acids in the form of salts may be used as complexing agents. Miura et al. teach that the complexing agent serves the purpose of adjusting the pH of the electroplating solution.

In response, claim 1 recites an organic acid. Claim 2 recites wherein the organic acid is **citric acid** or acetic acid. Miura teaches **citric acid** (page 2, [0027]). The purpose for which the citric acid serves does not distinguish the bath from the prior art because a compound and all of its properties are inseparable. *In re Papesch*, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963).

Applicants state that Miura et al. teach that any type of wetting agent may be added to the electroplating solution including nonionic surfactants, anionic surfactants, cationic surfactants and amphoteric surfactants.

In response, claim 1 recites **a non-ionic polymer**. Miura teaches **a non-ionic**

surfactant (page 3, [0043]), where Willis teaches that non-ionic surfactants include non-ionic polymers (col. 5, line 39 to col. 8, line 46). The non-ionic polymer recited in the claim 1 is broad in scope, and would read on the non-ionic surfactant disclosed by Miura and Willis.

Applicants state that Miura et al. teach that the electroplating solution adds to the thickness of the seed layer.

In response, the claiming of a new use, new function or unknown property which is inherently present in the prior art does not make the claims patentable (MPEP § 2112).

Applicants state that nowhere do Miura et al. teaches or suggest “an electrolyte bath comprising a suspension layer for forming a wetting layer on a substrate for copper electroplating, comprising: ...”

In response, claim 1, lines 1-2, recites “a suspension layer”. This suspension layer is recited in the preamble of the claim and has nothing to do with the body of the claim, i.e., the electrolyte bath comprising: (i) an electrolyte solution and a composition comprising an organic and a non-ionic polymer because there is no relationship between the suspension layer and the separated suspension layer (from claim 1, lines 8-9).

Furthermore, the electrolyte bath recited in claim 1 has two separate and

independent definitions (see the word “comprising” in claim 1, lines 1 and 3).

Applicants state that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

In response, Miura teaches each and every element of the electrolyte bath as set forth in the claims. Miura teaches an electrolyte bath comprising:

(i) an electrolyte solution; and

(ii) a composition comprising an organic acid and a non-ionic polymer, said composition provided in said electrolyte solution.

What the composition forms does not compositionally distinguish the electrolyte bath from the prior art. The composition as presently claimed read on the composition disclosed in Miura.

Applicants state that the identical invention must be shown in as complete detail as is contained in the ... claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

In response, “for forming a wetting layer on a substrate” (from claim 1, line 2) and “wherein said composition forms a separate suspension layer within said electrolyte solution” (from claim 1, lines 8-9) does not compositionally distinguish the bath from the

prior art. The composition as presently claimed read on the composition disclosed in Miura. Thus, either the bath of the present invention has the same properties as Miura or the bath of Miura has the same properties as the bath of the present invention because similar compositions can reasonably be expected to yield products which inherently have the same properties.

Applicants state that they reject Examiner's argument since Miura et al. teach that both an organic acid and a non-ionic polymer may be used as complexing agents and added to the electroplating solution to control the pH of the electroplating solution, that it is inherent that a suspension layer is formed within the electrolyte as Applicants have disclosed and claimed. Examiner has provided no support for this assertion, and Miura et al. nowhere disclose or teach that such a suspension layer is formed or that it may be used to form a wetting layer on a substrate.

In response, Miura teaches each and every element of the electrolyte bath as set forth in the claims. Miura teaches an electrolyte bath comprising:

- (i) an electrolyte solution; and
- (ii) a composition comprising an organic acid and a non-ionic polymer, said composition provided in said electrolyte solution.

The purpose for which the organic acid and non-ionic polymer serve does not distinguish the bath from the prior art because a compound and all of its properties are inseparable. *In re Papesch*, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963).

Forming a suspension layer or that it may be used to form a wetting layer on a substrate does not compositionally distinguish the bath from the prior art.

The discovery of a previously unappreciated property of a prior art composition, or a scientific explanation for the prior art's functioning, does not render an old composition patentably new to the discoverer. The identification and characterization of a prior art material also does not make it novel (MPEP § 2112).

Applicants state that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Oelrich*, 666 F. 2d 578, 581-582, 212 USPQ 323, 326 (CCPA 1981).

In response, the missing descriptive matter in Miura was not based on what would result due to optimization of conditions (Miura teaches the claimed conditions), not what was necessarily present in the prior art (Miura teaches each and every element of the electrolyte bath as set forth in the claims).

Applicants state that in relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

In response, Miura physically teaches that same composition as presently claimed. If the composition is physically the same, it must have the same properties (MPEP § 2112.01(II)).

II. Claims **9 and 10** have been rejected under 35 U.S.C. 102(a) as being anticipated by **Miura et al.** (US Patent Application Publication No. 2003/0155247 A1).

The rejection of claims 9 and 10 under 35 U.S.C. 102(a) as being anticipated by Miura et al. is as applied in the Office Action dated January 23, 2006 and incorporated herein. The rejection has been maintained for the reasons as discussed above and incorporated herein.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Method

III. Claims **17 and 20** have been rejected under 35 U.S.C. 102(a) as being anticipated by **Miura et al.** (US Patent Application Publication No. 2003/0155247 A1).

The rejection of claims 17 and 20 under 35 U.S.C. 102(a) as being anticipated by Miura et al. is as applied in the Office Action dated January 23, 2006 and incorporated herein. The rejection has been maintained for the reasons as discussed above and incorporated herein, and furthermore:

Applicants state that nowhere do Miura et al. disclose or suggest a suspension

layer or forming a wetting layer prior to electroplating.

In response, there is no requirement that the missing descriptive matter be expressly articulated in one or more of the references. References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In re Simon* 174 USPQ 114 (CCPA 1972); *In re Richman* 165 USPQ 509, 514 (CCPA 1970).

Claim Rejections - 35 USC § 103

Bath

I. Claims **3-8** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Miura et al.** (US Patent Application Publication No. 2003/0155247 A1) as applied to claims 1 and 2 above, and further in view of **Willis** (US Patent No. 4,347,108).

The rejection of claims 3-8 under 35 U.S.C. 103(a) as being unpatentable over Miura et al. as applied to claims 1 and 2 above, and further in view of Willis is as applied in the Office Action dated January 23, 2006 and incorporated herein. The rejection has been maintained for the reasons as discussed above and incorporated herein.

Applicants state that the formation of a suspension layer as Applicants have disclosed and claimed would make the complexing agents of Miura et al. unsuitable for the intended purpose of controlling the pH of the electroplating solution.

In response, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore &*

Associates, Inc. V. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. Denied*, 469 U.S. 851 (1984). In addition, a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use, see *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Further, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments, see *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). See MPEP § 2141.02, MPEP 2145X.D.1 and MPEP § 2123.

Applicants state that even assuming *arguendo*, a proper motivation for combination, such combination fails to produce Applicants disclosed and claimed invention.

In response, Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Applicants state that the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In response, Miura physically teaches that same composition as presently claimed. If the composition is physically the same, it must have the same properties (MPEP § 2112.01(II)).

Applicants state that Examiner's arguments directed toward claimed concentrations of Applicants suspension layer (composition), as being optimizable ranges obtainable by routine experimentation is misplaced since, Examiner has not shown several elements of Applicants invention, or any suggestion thereof, in the prior art.

In response, Miura teaches that the complexing agent is used in the concentration range of 0.05 to 2.0 mol/l (page 3, [0039]). The wetting agent inherently has a concentration.

It has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re*

Aller, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

Method

II. Claims **11-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miura et al.** (US Patent Application Publication No. 2003/0155247 A1) as applied to claims 9 and 10 above, and further in view of **Willis** (US Patent No. 4,347,108).

The rejection of claims 11-16 under 35 U.S.C. 103(a) as being unpatentable over **Miura et al.** as applied to claims 9 and 10 above, and further in view of **Willis** is as applied in the Office Action dated January 23, 2006 and incorporated herein. The rejection has been maintained for the reasons as discussed above and incorporated herein.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

III. Claims **18 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miura et al.** (US Patent Application Publication No. 2003/0155247 A1) as applied to claims 17 and 20 above, and further in view of **Willis** (US Patent No. 4,347,108).

The rejection of claims 18 and 19 under 35 U.S.C. 103(a) as being unpatentable over **Miura et al.** as applied to claims 17 and 20 above, and further in view of **Willis** is as applied in the Office Action dated January 23, 2006 and incorporated herein. The rejection has been maintained for the reasons as discussed above and incorporated

herein.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Response to Amendment

Claim Objections

Claim 9 is objected to because of the following informalities:

Claim 9

line 2, it is suggested that the word -- a -- be inserted after the word "on".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

lines 1 and 3, the word "comprising" is used twice to introduce the electrolyte bath composition. It is unclear what is the scope of the electrolyte bath.

Art Unit: 1753

lines 8-9, it appears that “a separated suspension layer” is the same as the suspension layer recited in claim 1, line 2. However, it is unclear if it is. If it is not, then what is the relationship between the separated suspension layer and the suspension layer?

Claim 9

lines 1 and 4, the word “comprising” is used twice to introduce the electrolyte bath composition. It is unclear what is the scope of the electrolyte bath.

lines 8-9, it appears that “a separated suspension layer” is the same as the suspension layer recited in claim 9, line 2. However, it is unclear if it is. If it is not, then what is the relationship between the separated suspension layer and the suspension layer?

line 9, recites “said suspension layer”. Is this layer further limiting the suspension layer recited in claim 9, line 2, or the separated suspension layer recited in claim 9, line 8?

line 10, it appears that “a wetting layer” is the same as the wetting layer recited in claim 9, line 2. However, it is unclear if it is. If it is, then it is suggested that the word “a” be amended to the word -- the --.

line 10, it appears that "a substrate" is the same as the substrate recited in claim 9, line 2. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

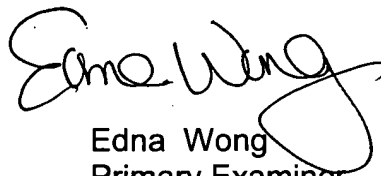
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

Art Unit: 1753

supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Edna Wong
Primary Examiner
Art Unit 1753

EW
November 11, 2006